CORE
Metadata, citation and similar papers at core.ac.uk
Provided by eGrove (Univ. of Mississippi)

University of Mississippi
eGrove

Statements on Auditing Standards

American Institute of Certified Public Accountants (AICPA) Historical Collection

1981

Audit sampling; Statement on auditing standards, 039

American Institute of Certified Public Accountants. Auditing Standards Board

Follow this and additional works at: https://egrove.olemiss.edu/aicpa_sas

Part of the Accounting Commons, and the Taxation Commons

Recommended Citation
American Institute of Certified Public Accountants. Auditing Standards Board, "Audit sampling; Statement on auditing standards, 039" (1981). *Statements on Auditing Standards*. 38.
https://egrove.olemiss.edu/aicpa_sas/38

This Article is brought to you for free and open access by the American Institute of Certified Public Accountants (AICPA) Historical Collection at eGrove. It has been accepted for inclusion in Statements on Auditing Standards by an authorized administrator of eGrove. For more information, please contact egrove@olemiss.edu.

Statement on Auditing Standards

June 1981

39

Issued by the Auditing Standards Board

AICPA American Institute of Certified Public Accountants

Audit Sampling

(Supersedes Statement on Auditing Standards No. 1, sections 320A, "Relationship of Statistical Sampling to Generally Accepted Auditing Standards," and 320B, "Precision and Reliability for Statistical Sampling in Auditing.")

1. Audit sampling is the application of an audit procedure to less than 100 percent of the items within an account balance or class of transactions for the purpose of evaluating some characteristic of the balance or class.[1] This Statement provides guidance for planning, performing, and evaluating audit samples.

2. The auditor often is aware of account balances and transactions that may be more likely to contain errors.[2] He considers this knowledge in planning his procedures, including audit sampling. The auditor usually will have no special knowledge about other account balances and transactions that, in his judgment, will need to be tested to fulfill his audit objectives. Audit sampling is especially useful in these cases.

[1]There may be other reasons for an auditor to examine less than 100 percent of the items comprising an account balance or class of transactions. For example, an auditor may examine only a few transactions from an account balance or class of transactions to *(a)* gain an understanding of the nature of an entity's operations or *(b)* clarify his understanding of the design of the entity's internal accounting control system. In such cases, the guidance in this statement is not applicable.

[2]For purposes of this Statement, *errors* includes both errors and irregularities as defined in SAS No. 16, *The Independent Auditor's Responsibility for the Detection of Errors or Irregularities.*

Copyright © 1981 by the
American Institute of Certified Public Accountants, Inc.
1211 Avenue of the Americas, New York, N.Y. 10036

1234567890 AudS 8987654321

3. There are two general approaches to audit sampling: nonstatistical and statistical. Both approaches require that the auditor use professional judgment in planning, performing, and evaluating a sample and in relating the evidential matter produced by the sample to other evidential matter when forming a conclusion about the related account balance or class of transactions. The guidance in this Statement applies equally to nonstatistical and statistical sampling.

4. The third standard of field work states, "Sufficient competent evidential matter is to be obtained through inspection, observation, inquiries, and confirmations to afford a reasonable basis for an opinion regarding the financial statements under examination." Either approach to audit sampling, when properly applied, can provide sufficient evidential matter.

5. The sufficiency of evidential matter is related to the design and size of an audit sample, among other factors. The size of a sample necessary to provide sufficient evidential matter depends on both the objectives and the efficiency of the sample. For a given objective, the efficiency of the sample relates to its design; one sample is more efficient than another if it can achieve the same objectives with a smaller sample size. In general, careful design can produce more efficient samples.

6. Evaluating the competence of evidential matter is solely a matter of auditing judgment and is not determined by the design and evaluation of an audit sample. In a strict sense, the sample evaluation relates only to the likelihood that existing monetary errors or deviations from prescribed procedures are proportionately included in the sample, not to the auditor's treatment of such items. Thus, the choice of nonstatistical or statistical sampling does not directly affect the auditor's decisions about the auditing procedures to be applied, the competence of the evidential matter obtained with respect to individual items in the sample, or the actions that might be taken in light of the nature and cause of particular errors.

Uncertainty and Audit Sampling

7. Some degree of uncertainty is implicit in the concept of "a reasonable basis for an opinion" referred to in the third standard of field

work. The justification for accepting some uncertainty arises from the relationship between such factors as the cost and time required to examine all of the data and the adverse consequences of possible erroneous decisions based on the conclusions resulting from examining only a sample of the data. If these factors do not justify the acceptance of some uncertainty, the only alternative is to examine all of the data. Since this is seldom the case, the basic concept of sampling is well established in auditing practice.

8. For purposes of this Statement, the uncertainty inherent in applying auditing procedures will be referred to as *ultimate risk*. Ultimate risk is a combination of the risk that material errors will occur in the accounting process used to develop the financial statements and the risk that any material errors that occur will not be detected by the auditor. The risk of these adverse events occurring jointly can be viewed as the product of the respective individual risks. The auditor may rely on internal accounting control to reduce the first risk and on substantive tests (tests of details of transactions and balances and analytical review procedures) to reduce the second risk.

9. Ultimate risk includes both uncertainties due to sampling and uncertainties due to factors other than sampling. These aspects of ultimate risk are sampling risk and nonsampling risk, respectively.

10. Sampling risk arises from the possibility that, when a compliance or a substantive test is restricted to a sample, the auditor's conclusions may be different from the conclusions he would reach if the test were applied in the same way to all items in the account balance or class of transactions. That is, a particular sample may contain proportionately more or less monetary errors or compliance deviations than exist in the balance or class as a whole. For a sample of a specific design, sampling risk varies inversely with sample size: the smaller the sample size, the greater the sampling risk.

11. Nonsampling risk includes all the aspects of ultimate risk that are not due to sampling. An auditor may apply a procedure to all transactions or balances and still fail to detect a material misstatement or a material internal accounting control weakness. Nonsampling risk includes the possibility of selecting audit procedures that are not appropriate to achieve the specific objective. For example, confirming recorded receivables cannot be relied on to reveal unrecorded receiv-

ables. Nonsampling risk also arises because the auditor may fail to recognize errors included in documents that he examines, which would make that procedure ineffective even if he were to examine *all* items. The risk of nonsampling error can be reduced to a negligible level through such factors as adequate planning and supervision (see SAS No. 22, *Planning and Supervision*) and proper conduct of a firm's audit practice (see SAS No. 25, *The Relationship of Generally Accepted Auditing Standards to Quality Control Standards*).

Sampling Risk

12. The auditor should apply professional judgment in assessing sampling risk. In performing substantive tests of details the auditor is concerned with two aspects of sampling risk:

- *The risk of incorrect acceptance* is the risk that the sample supports the conclusion that the recorded account balance is not materially misstated when it is materially misstated.
- *The risk of incorrect rejection* is the risk that the sample supports the conclusion that the recorded account balance is materially misstated when it is not materially misstated.

The auditor is also concerned with two aspects of sampling risk in performing compliance tests of internal accounting control:

- *The risk of overreliance* on internal accounting control is the risk that the sample supports the auditor's planned degree of reliance on the control when the true compliance rate does not justify such reliance.
- *The risk of underreliance* on internal accounting control is the risk that the sample does not support the auditor's planned degree of reliance on the control when the true compliance rate supports such reliance.

13. The risk of incorrect rejection and the risk of underreliance on internal accounting control relate to the efficiency of the audit. For example, if the auditor's evaluation of an audit sample leads him to the initial erroneous conclusion that a balance is materially misstated when it is not, the application of additional audit procedures and consideration of other audit evidence would ordinarily lead the auditor to the correct conclusion. Similarly, if the auditor's evaluation of a sample leads him to unnecessarily reduce his planned degree of reli-

ance on internal accounting control, he would ordinarily increase the scope of substantive tests to compensate for the perceived inability to rely on internal accounting control to the extent originally planned. Although the audit may be less efficient in these circumstances, the audit is, nevertheless, effective.

14. The risk of incorrect acceptance and the risk of overreliance on internal accounting control relate to the effectiveness of an audit in detecting an existing material misstatement. These risks are discussed in the following paragraphs.

Sampling in Substantive Tests of Details

Planning Samples

15. Planning involves developing a strategy for conducting an audit of financial statements. For general guidance on planning, see SAS No. 22, *Planning and Supervision.*

16. When planning a particular sample for a substantive test of details, the auditor should consider

- The relationship of the sample to the relevant audit objective (see SAS No. 31, *Evidential Matter*).
- Preliminary estimates of materiality levels.
- The auditor's allowable risk of incorrect acceptance.
- Characteristics of the population, that is, the items comprising the account balance or class of transactions of interest.

17. When planning a particular sample, the auditor should consider the specific audit objective to be achieved and should determine that the audit procedure, or combination of procedures, to be applied will achieve that objective. The auditor should determine that the population from which he draws the sample is appropriate for the specific audit objective. For example, an auditor would not be able to detect understatements of an account due to omitted items by sampling the recorded items. An appropriate sampling plan for de-

tecting such understatements would involve selecting from a source in which the omitted items are included. To illustrate, subsequent cash disbursements might be sampled to test recorded accounts payable for understatement because of omitted purchases, or shipping documents might be sampled for understatement of sales due to shipments made but not recorded as sales.

18. Evaluation in monetary terms of the results of a sample for a substantive test of details contributes directly to the auditor's purpose, since such an evaluation can be related to his judgment of the monetary amount of errors that would be material. When planning a sample for a substantive test of details, the auditor should consider how much monetary error in the related account balance or class of transactions may exist without causing the financial statements to be materially misstated. This maximum monetary error for the balance or class is called *tolerable error* for the sample. Tolerable error is a planning concept and is related to the auditor's preliminary estimates of materiality levels in such a way that tolerable error, combined for the entire audit plan, does not exceed those estimates.

19. The second standard of field work states, "There is to be a proper study and evaluation of the existing internal control as a basis for reliance thereon and for the determination of the resultant extent of the tests to which auditing procedures are to be restricted." The second standard of field work recognizes that the extent of substantive tests required to obtain sufficient evidential matter under the third standard should vary inversely with the auditor's reliance on internal accounting control. These standards taken together imply that the combination of the auditor's reliance on internal accounting control and his reliance on his substantive tests should provide a reasonable basis for his opinion, although the portion of reliance derived from the respective sources may vary. The greater the reliance on internal accounting control or on other substantive tests directed toward the same specific audit objective, the greater the allowable risk of incorrect acceptance for the substantive test of details being planned and, thus, the smaller the required sample size for the substantive test of details. For example, if the auditor relies neither on internal accounting control nor on other substantive tests directed toward the same specific audit objective, he should allow for a low risk of incorrect acceptance for the substantive test of

details.[3] Thus, the auditor would select a larger sample for the test of details than if he allowed for a higher risk of incorrect acceptance.

20. The Appendix illustrates how the auditor may relate the risk of incorrect acceptance for a particular substantive test of details to his evaluations of both the internal accounting control system and the effectiveness of any other substantive tests related to the same specific audit objective.

21. As discussed in SAS No. 31, the sufficiency of tests of details for a particular account balance or class of transactions is related to the individual importance of the items examined as well as to the potential for material error. When planning a sample for a substantive test of details, the auditor uses his judgment to determine which items, if any, in an account balance or class of transactions should be individually examined and which items, if any, should be subject to sampling. The auditor should examine those items for which, in his judgment, acceptance of some sampling risk is not justified. For example, these may include items for which potential errors could individually equal or exceed the tolerable error. Any items that the auditor has decided to examine 100 percent are not part of the items subject to sampling. Other items that, in the auditor's judgment, need to be tested to fulfill the audit objective but need not be examined 100 percent, would be subject to sampling.

22. The auditor may be able to reduce the required sample size by separating items subject to sampling into relatively homogeneous groups on the basis of some characteristic related to the specific audit objective. For example, common bases for such groupings are the recorded or book value of the items, the nature of internal accounting control related to processing the items, and special considerations associated with certain items. An appropriate number of items is then selected from each group.

23. To determine the number of items to be selected in a sample

[3]Some auditors prefer to think of risk levels in quantitative terms. For example, in the circumstances described, an auditor might think in terms of a 5 percent risk of incorrect acceptance for the substantive test of details. Risk levels used in sampling applications in other fields are not necessarily relevant in determining appropriate levels for applications in auditing because an audit includes many interrelated tests and sources of evidence.

for a particular substantive test of details, the auditor should consider the tolerable error, the allowable risk of incorrect acceptance, and the characteristics of the population. An auditor applies professional judgment to relate these factors in determining the appropriate sample size. The Appendix illustrates the effect these factors may have on sample size.

Sample Selection

24. Sample items should be selected in such a way that the sample can be expected to be representative of the population. Therefore, all items in the population should have an opportunity to be selected. For example, random-based selection of items represents one means of obtaining such samples.[4]

Performance and Evaluation

25. Auditing procedures that are appropriate to the particular audit objective should be applied to each sample item. In some circumstances the auditor may not be able to apply the planned audit procedures to selected sample items because, for example, supporting documentation may be missing. The auditor's treatment of unexamined items will depend on their effect on his evaluation of the sample. If the auditor's evaluation of the sample results would not be altered by considering those unexamined items to be in error, it is not necessary to examine the items. However, if considering those unexamined items to be misstated would lead to a conclusion that the balance or class is materially in error, the auditor should consider alternative procedures that would provide him with sufficient evidence to form a conclusion. The auditor should also consider whether the reasons for his inability to examine the items have implications in relation to his planned reliance on internal accounting control or his degree of reliance on management representations.

26. The auditor should project the error results of the sample to

[4]Random-based selection includes, for example, random sampling, stratified random sampling, sampling with probability proportional to size, and systematic sampling (for example, every hundredth item) with one or more random starts.

the items from which the sample was selected.[5] There are several acceptable ways to project errors from a sample. For example, an auditor may have selected a sample of every twentieth item (50 items) from a population containing one thousand items. If he discovered overstatement errors of $3,000 in that sample, the auditor could project a $60,000 overstatement by dividing the amount of error in the sample by the fraction of total items from the population included in the sample. The auditor should add that projection to the errors discovered in any items examined 100 percent. This total projected error should be compared with the tolerable error for the account balance or class of transactions, and appropriate consideration should be given to sampling risk. If the total projected error is less than tolerable error for the account balance or class of transactions, the auditor should consider the risk that such a result might be obtained even though the true monetary error for the population exceeds tolerable error. For example, if the tolerable error in an account balance of $1 million is $50,000 and the total projected error based on an appropriate sample (see paragraph 23) is $10,000, he may be reasonably assured that there is an acceptably low sampling risk that the true monetary error for the population exceeds tolerable error. On the other hand, if the total projected error is close to the tolerable error, the auditor may conclude that there is an unacceptably high risk that the actual errors in the population exceed the tolerable error. An auditor uses professional judgment in making such evaluations.

27. In addition to the evaluation of the frequency and amounts of monetary misstatements, consideration should be given to the qualitative aspects of the errors. These include (*a*) the nature and cause of misstatements, such as whether they are differences in principle or in application, are errors or irregularities, or are due to misunderstanding of instructions or to carelessness, and (*b*) the possible relationship of the misstatements to other phases of the audit. The discovery of an irregularity ordinarily requires a broader consideration of possible implications than does the discovery of an error.

28. If the sample results suggest that the auditor's planning as-

[5] If the auditor has separated the items subject to sampling into relatively homogeneous groups (see paragraph 22), he separately projects the error results of each group and sums them.

sumptions were in error, he should take appropriate action. For example, if monetary errors are discovered in a substantive test of details in amounts or frequency that is greater than is consistent with the degree of reliance initially placed on internal accounting control, the auditor should alter his preliminary evaluation of the internal accounting control system. The auditor should also consider whether to modify the audit tests of other accounts that were designed with reliance placed on those internal accounting controls. For example, a large number of errors discovered in confirmation of receivables may indicate the need to reconsider the initial evaluation of the reliance to be placed on internal accounting control for purposes of designing substantive tests of sales or cash receipts.

29. The auditor should relate the evaluation of the sample to other relevant audit evidence when forming a conclusion about the related account balance or class of transactions.

30. Projected error results for all audit sampling applications and all known errors from nonsampling applications should be considered in the aggregate along with other relevant audit evidence when the auditor evaluates whether the financial statements taken as a whole may be materially misstated.

Sampling in Compliance Tests of Internal Accounting Controls

Planning Samples

31. When planning a particular audit sample for a compliance test of details, the auditor should consider

- The relationship of the sample to the objective of the compliance test.
- The maximum rate of deviations from prescribed control procedures that would support his planned reliance.
- The auditor's allowable risk of overreliance.
- Characteristics of the population, that is, the items comprising the account balance or class of transactions of interest.

32. Sampling generally is not applicable to tests of compliance with internal accounting control procedures that depend primarily on appropriate segregation of duties or that otherwise provide no documentary evidence of performance (see SAS No. 1, section 320.59). When designing samples for the purpose of testing compliance with internal accounting control procedures that leave an audit trail of documentary evidence, the auditor ordinarily should plan to evaluate compliance in terms of deviations from (or compliance with) pertinent control procedures, as to either the rate of such deviations or the monetary amount of the related transactions.[6] In this context, pertinent control procedures are ones that, had they not been included in the design of the internal accounting control system, would have adversely affected the auditor's preliminary evaluation of the system. The auditor's overall evaluation of controls for a particular purpose involves combining judgments about the prescribed controls, the sample results of compliance tests, and the results of observation and inquiry about controls not leaving an audit trail of documentary evidence.

33. The auditor should assess the maximum rate of deviations from a prescribed control procedure that he would be willing to accept without altering his planned reliance on the control. This is the *tolerable rate.* In assessing the tolerable rate, the auditor should consider the relationship of procedural deviations to (*a*) the accounting records being tested, (*b*) any related internal accounting control procedures, and (*c*) the purpose of the auditor's evaluation. For example, if substantial reliance is to be placed on the control procedures, he may decide that a tolerable rate of 5 percent or possibly less would be reasonable; if less reliance is planned, the auditor may decide that a tolerable rate of 10 percent is reasonable.

34. In assessing the tolerable rate of deviations, the auditor should consider that, while deviations from pertinent control procedures increase the risk of material errors in the accounting records, such deviations do not necessarily result in errors. For example, a recorded disbursement that does not show evidence of required approval may nevertheless be a transaction that is properly authorized and re-

[6]For simplicity the remainder of this Statement will refer to only the rate of deviations.

corded. Deviations would result in errors in the accounting records only if the deviations and the errors occurred on the same transactions. Deviations from pertinent control procedures at a given rate ordinarily would be expected to result in errors at a lower rate.

35. In some situations, an internal accounting control objective may be achieved by a combination of procedures. If a combination of two or more control procedures is necessary to achieve an internal accounting control objective, those control procedures should be regarded as a single procedure, and deviations from any procedure in the combination should be evaluated on that basis. If both control procedures are designed to achieve the objective individually, the significance of compliance deviations from a control procedure on which the auditor intends to rely is affected by the potential effectiveness of the related control procedure.

36. Samples taken for compliance tests are intended to provide a basis for the auditor to conclude whether internal accounting control procedures are being applied as prescribed. Because the compliance test is the primary source of evidence of whether the procedure is being applied as prescribed, the auditor should allow for a low level of risk of overreliance.[7]

37. To determine the number of items to be selected for a particular sample for a compliance test, the auditor should consider the tolerable rate of deviation from the control(s) being tested, based on the planned degree of reliance; the likely rate of deviations; and the allowable risk of overreliance on internal accounting controls. An auditor applies professional judgment to relate these factors in determining the appropriate sample size.

Sample Selection

38. Sample items should be selected in such a way that the sample can be expected to be representative of the population. Therefore, all items in the population should have an opportunity to be selected. Random-based selection of items represents one means of obtaining

[7]The auditor who prefers to think of risk levels in quantitative terms might consider, for example, a 5 percent to 10 percent risk of overreliance on internal accounting control.

such samples. Ideally, the auditor should use a selection method that has the potential for selecting items from the entire period under audit. SAS No. 1, section 320.61, provides guidance applicable to the auditor's use of sampling during interim and remaining periods.

Performance and Evaluation

39. Auditing procedures that are appropriate to achieve the objective of the compliance test should be applied to each sample item. If the auditor is not able to apply the planned audit procedures or appropriate alternative procedures to selected items, he should consider the reasons for this limitation, and he should ordinarily consider those selected items to be deviations from the procedures for the purpose of evaluating the sample.

40. The deviation rate in the sample is the auditor's best estimate of the deviation rate in the population from which it was selected. If the estimated deviation rate is less than the tolerable rate for the population, the auditor should consider the risk that such a result might be obtained even though the true deviation rate for the population exceeds the tolerable rate for the population. For example, if the tolerable rate for a population is 5 percent and no deviations are found in a sample of 60 items, the auditor may conclude that there is an acceptably low sampling risk that the true deviation rate in the population exceeds the tolerable rate of 5 percent. On the other hand, if the sample includes, for example, two or more deviations, the auditor may conclude that there is an unacceptably high sampling risk that the rate of deviations in the population exceeds the tolerable rate of 5 percent. An auditor applies professional judgment in making such an evaluation.

41. In addition to the evaluation of the frequency of deviations from pertinent procedures, consideration should be given to the qualitative aspects of the deviations. These include (*a*) the nature and cause of the deviations, such as whether they are errors or irregularities or are due to misunderstanding of instructions or to carelessness, and (*b*) the possible relationship of the deviations to other phases of the audit. The discovery of an irregularity ordinarily requires a broader consideration of possible implications than does the discovery of an error.

42. If the auditor concludes that the sample results do not support the planned degree of reliance on the control procedure, planned substantive tests should be altered.

Dual-Purpose Samples

43. In some circumstances the auditor may design a sample that will be used for dual purposes: testing compliance with a control procedure that provides documentary evidence of performance and testing whether the recorded monetary amount of transactions is correct. In general, an auditor planning to use a dual-purpose sample would have made a preliminary assessment that there is an acceptably low risk that the rate of compliance deviations in the population exceeds the tolerable rate. For example, an auditor designing a compliance test of a control procedure over entries in the voucher register may plan a related substantive test at a risk level that anticipates reliance on that internal accounting control. The size of a sample designed for dual purposes should be the larger of the samples that would otherwise have been designed for the two separate purposes. In evaluating such tests, deviations from pertinent procedures and monetary errors should be evaluated separately using the risk levels applicable for the respective purposes.

Selecting a Sampling Approach

44. As discussed in paragraph 4, either a nonstatistical or statistical approach to audit sampling, when properly applied, can provide sufficient evidential matter.

45. Statistical sampling helps the auditor (*a*) to design an efficient sample,[8] (*b*) to measure the sufficiency of the evidential matter

[8]SAS No. 1, sections 320A and 320B, which are superseded by this Statement, used the terms *reliability* and *precision* to discuss the design of statistical audit samples. This Statement uses the word *risk* instead of reliability (risk is the complement of reliability) and the concepts of *tolerable error* and an *allowance for sampling risk* instead of precision. There are two reasons for this change: First, this Statement applies to both statistical and nonstatistical sampling and therefore requires nontechnical terms, and, second, the words reliability and precision each have been used to mean different things. Auditors may, of course, use whatever terms they prefer as long as they understand the relationship of those terms to the concepts in this Statement.

obtained, and (*c*) to evaluate the sample results. By using statistical theory, the auditor can quantify sampling risk to assist himself in limiting it to a level he considers acceptable. However, statistical sampling involves additional costs of training auditors, designing individual samples to meet the statistical requirements, and selecting the items to be examined. Because either nonstatistical or statistical sampling can provide sufficient evidential matter, the auditor chooses between them after considering their relative cost and effectiveness in the circumstances.

Effective Date

46. This statement is effective for examinations of financial statements for periods ended on or after June 25, 1982. Earlier application is encouraged.

Appendix

Relating the Risk of Incorrect Acceptance for a Substantive Test of Details to Other Sources of Audit Reliance

1. Ultimate risk, with respect to a particular account balance or class of transactions, is the risk that there is a monetary error greater than tolerable error in the balance or class that the auditor fails to detect. The auditor uses professional judgment in determining the allowable ultimate risk for a particular examination after he considers such factors as the risk of material misstatement in the financial statements, the cost to reduce the risk, and the effect of the potential misstatement on the use and understanding of the financial statements.

2. An auditor relies on the internal accounting controls, analytical review procedures, and substantive tests of details in whatever combination he believes adequately controls ultimate risk. However, the second standard of field work does not contemplate that the auditor will place complete reliance on internal accounting control to the exclusion of other auditing procedures with respect to material amounts in the financial statements.

3. The sufficiency of audit sample sizes, whether nonstatistical or statistical, is influenced by several factors. Table 1 illustrates how several of these factors may affect sample sizes for a substantive test of details. Factors *a* and *b* in table 1 should be considered together (see paragraph 8 of the SAS). For example, weak internal accounting controls and the absence of other substantive tests related to the same audit objective ordinarily require larger sample sizes for related substantive tests of details than if there were other sources of reliance. Alternatively, strong internal accounting controls in combination with highly effective analytical review procedures and other relevant substantive tests may lead the auditor to conclude that the sample, if any, needed for an additional test of details can be small.

4. The following model expresses the general relationship of the risks associated with the auditor's evaluation of internal accounting controls, substantive tests of details, and analytical review procedures and other relevant substantive tests. The model is not intended to be a mathematical formula including all factors that may influence the determination of individual risk components; however, some auditors find such a model to be useful when planning appropriate risk levels for audit procedures to achieve the auditor's desired ultimate risk.

$$UR = IC \times AR \times TD$$

An auditor might use this model to obtain an understanding of an appropriate risk of incorrect acceptance for a substantive test of details as follows:

$TD = UR / (IC \times AR)$

UR = The allowable ultimate risk that monetary errors equal to tolerable error might remain undetected in the account balance or class of transactions after the auditor has completed all audit procedures deemed necessary.[1] The auditor uses his professional judgment to determine the allowable ultimate risk after considering factors such as those discussed in paragraph 1 of this Appendix.

IC = The auditor's assessment of the risk that, given that errors equal to tolerable error occur, the system of internal accounting control fails to detect them, whether because of poorly designed controls or lack of compliance. The auditor would assign this risk for control procedures on which he intends to rely in establishing the scope of the substantive test of details.[2] The quantification for this model relates to the auditor's evaluation of the overall effectiveness of those internal accounting controls that would prevent or detect material errors equal to tolerable error in the related account balance or class of transactions. For example, if the auditor believes that pertinent controls would prevent or detect errors equal to tolerable error about half the time, he would assess this risk as 50 percent. (IC is not the same as the risk of overreliance on internal accounting control.)

AR = The auditor's assessment of the risk that analytical review procedures and other relevant substantive tests would fail to detect errors equal to tolerable error, given that such errors occur and are not detected by the system of internal accounting control.

TD = The allowable risk of incorrect acceptance for the substantive test of details, given that errors equal to tolerable error occur and are not detected by the system of internal accounting control or analytical review procedures and other relevant substantive tests.

5. The auditor planning a statistical sample can use the relationship in paragraph 4 of this Appendix to assist in planning his allowable risk of

[1]For purposes of this Appendix, the nonsampling risk aspect of ultimate risk is assumed to be negligible, based on the level of quality controls in effect.

[2]The risk that monetary errors equal to tolerable error would have occurred in the absence of internal accounting controls related to the account balance or class of transactions under audit is difficult and potentially costly to quantify. For this reason in this model it is implicitly set conservatively at one, although audit experience indicates clearly that it is substantially lower. Accordingly, it is not a factor in the relationship expressed above. Therefore, the actual risk will ordinarily be less than UR.

incorrect acceptance for a specific substantive test of details. To do so, he selects an acceptable ultimate risk (UR) and subjectively quantifies his judgment of risks IC and AR. Some levels of these risks are implicit in evaluating audit evidence and reaching conclusions. Auditors using the relationship prefer to evaluate these judgment risks explicitly.

6. The relationships between these independent risks are illustrated in table 2. In table 2 it is assumed, for illustrative purposes, that the auditor has chosen an ultimate risk of 5 percent. Table 2 incorporates the premise that no system of internal accounting control can be expected to be completely effective in detecting aggregate errors equal to tolerable error that might occur (see SAS No. 1, section 320.34). The table also illustrates the fact that the risk level for substantive tests of particular account balances or classes of transactions is not an isolated decision. Rather, it is a direct consequence of the auditor's evaluation of reliance on internal accounting control and analytical review procedures and other relevant substantive tests, and it cannot be properly considered out of this context.

Table 1

Factors Influencing Sample Sizes for a Substantive Test of Details in Sample Planning

Factor	*Conditions leading to* *Smaller sample size*	*Larger sample size*	*Related factor for substantive sample planning*
a. Reliance on internal accounting controls.	Greater reliance on internal accounting controls.	Lesser reliance on internal accounting controls.	Allowable risk of incorrect acceptance.
b. Reliance on other substantive tests related to same account balance or class of transactions (including analytical review procedures and other relevant substantive tests).	Substantial reliance to be placed on other relevant substantive tests.	Little or no reliance to be placed on other relevant substantive tests.	Allowable risk of incorrect acceptance.
c. Measure of tolerable error for a specific account.	Larger measure of tolerable error.	Smaller measure of tolerable error.	Tolerable error.
d. Expected size and frequency of errors.	Smaller errors or lower frequency.	Larger errors or higher frequency.	Assessment of population characteristics.
e. Number of items in population.	Virtually no effect on sample size unless population is very small.		

Table 2

Allowable Risk of Incorrect Acceptance (TD) for Various Assessments of IC and AR for UR = .05

Auditor's subjective assessment of risk that internal accounting control might fail to detect aggregate errors equal to tolerable error.	Auditor's subjective assessment of risk that analytical review procedures and other relevant substantive tests might fail to detect aggregate errors equal to tolerable error.			
IC	*AR*			
	10%	*30%*	*50%*	*100%*
	TD			
10%	*	*	*	50%
30%	*	55%	33%	16%
50%	*	33%	20%	10%
100%	50%	16%	10%	5%

*The allowable level of UR of 5 percent exceeds the product of IC and AR, and, thus, the planned substantive test of details may not be necessary.

Note: Table entries for TD are computed from the illustrative model: TD equals UR/(IC × AR). For example, for IC = .50 and AR = .30, TD = .05/ (.50 × .30) or .33 (equals 33%).

The Statement entitled Audit Sampling *was adopted by the assenting votes of the fifteen members of the board, of whom one, Mr. Mentzel, assented with qualification.*

Mr. Mentzel qualifies his assent to this Statement for several reasons. He believes that an audit guide should have preceded the Statement to promote appropriate research and that the profession should have been given the opportunity to experiment with its concepts prior to the promulgation of an auditing standard. Mr. Mentzel believes that neither the applicability nor the usefulness in nonstatistical sampling of some concepts adopted in the Statement has been demonstrated. For example, Mr. Mentzel believes that it is not necessary for an auditor using nonstatistical sampling to perform certain procedures required by the Statement in order to form an audit opinion. Such procedures include the requirement in paragraphs 18 and 33 to establish tolerable errors and rates in advance of obtaining sample results and the requirement in paragraph 30 to aggregate projected errors in determining whether financial statements taken as a whole may be materially misstated. He believes the latter requirement represents a premature conclusion on an issue that is presently under study by an AICPA task force. Mr. Mentzel is particularly concerned that paragraph 45 may unduly influence auditors toward statistical sampling while inadequately discussing the fact that statistical samples are often more costly to extract than nonstatistical samples. Furthermore, while it is true that the Statement does not require the use of statistical sampling, he believes that paragraph 45, as well as other paragraphs in the Statement, contain an unnecessary and inappropriate bias toward statistical sampling.

Auditing Standards Board (1980-1981)

JAMES J. LEISENRING, *Chairman*
ROBERT W. BERLINER
J. FRANK BETTS
JOHN F. BURKE
HERMAN O. COLEMAN
ROBERT K. ELLIOTT
PHILIP E. FESS
DENNIS R. MEALS
ALVIN J. MENTZEL
JOHN F. MULLARKEY
JOHN P. THOMAS
L. EDWARD TUFFLY, JR.
MYRON WALD
GLENN M. WALKER
WAYNE WILLIAMSON

D. R. CARMICHAEL
Vice President, Auditing
GEORGE ZUBER
Manager, Auditing Standards

Note: *Statements on Auditing Standards are issued by the Auditing Standards Board, the senior technical body of the Institute designated to issue pronouncements on auditing matters. Rule 202 of the Institute's Code of Professional Ethics requires adherence to the applicable generally accepted auditing standards promulgated by the Institute. It recognizes Statements on Auditing Standards as interpretations of generally accepted auditing standards and requires that members be prepared to justify departures from such Statements.*

M0058798